Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_\_\_

**Passive transport observations**

**Part 1: Observing raisins in water**

|  |  |  |
| --- | --- | --- |
|  | BEFORE put in water | AFTER put in warm water for ~30 min |
| Description of raisin |  |  |

Procedure:

* In the data table above the raisin provided to your group. What does it look like? Feel like? etc. DO NOT EAT THE RAISIN!

1. Is the concentration of water higher outside the raisin (in the beaker of water) or inside the raisin? NOTE: concentration is amount of water in a given area.

2. PREDICT what will occur to the raisin after it soaks in water for at least 30 min.

* Drop the raisin into a small cup of warm water. (need enough water to cover the raisin)
* Wait at least 30 minutes (ok if it’s longer) and remove the raisin from the water. *While you are waiting move to Part 2.*
* When you take out the raisin write down a description of the raisin in the data table. How does it compare to what it looked like before it was in the water? What does it look like? Feel like? etc.

3. What happened to the raisin? Did water move into the raisin or out of the raisin?

4. The water outside the raisin was: isotonic, hypertonic, or hypotonic? Explain how you know.

5. What process caused the change in the raisin?

6. Does this process require energy? \_\_\_\_\_\_\_\_\_\_\_\_

* Throw out the raisin. Pour out the water in the sink and return the cup to its designated location.

**Part 2: Observing food dye in water**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Immediately after food dye added to water | 30 sec - 1 min after food dye added | 1 to 2 min after food dye added | 2 + min after food dye added |
| Description of water/food dye in beaker |  |  |  |  |

Procedure:

* Fill the beaker about three-fourths full.
* Place one drop of food coloring in the beaker of water.
* In the data table describe the appearance of the water and dye immediately after the dye is added to the water, 30 sec – 1 min after, etc.

Questions:

1. What was the concentration of food dye in the water before the food dye was added? (High? Low? Nonexistent?)
2. Immediately after the dye was dropped in the water where was the food dye concentration the highest?
3. After about two minutes what was the concentration of the food dye like? Was it still very high in one area and not in others?
4. The food dye spreading out in the water from an area of [high] to [low] is an example of what process?
5. Does this process require energy?

**Part 3: Modeling movement of molecules across cell membrane**

You will observe the diffusion of a substance across a semi permeable membrane. Iodine is a known indicator for starch. An indicator is a substance that chances color in the presence of the substance it indicates.

1. Describe what happens when iodine came into contact with starch.

2. What cell part does the plastic baggie represent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. What does the cornstarch-water mixture inside the baggie represent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Procedure:**

* Fill a plastic baggie with a teaspoon of corn starch and a half a cup of water tie bag. (This may already have been done for you).
* Fill a beaker about three-fourths full with water. Add at least twenty drops of iodine to a beaker filled with water so that it is a dark orange/light brown.
* Complete the first column of the data table below by describing the colors of the solution in the beaker and the solution in the baggie.
* Place the baggie in the beaker filled with water & iodine.

|  |  |  |
| --- | --- | --- |
|  | Starting Color | Color after 15 min |
| Solution in beaker |  |  |
| Solution in baggie |  |  |

* Wait at least fifteen minutes (ok if longer) and record your observations in the data table above
* While you are waiting, answer the questions.

Questions:

4. Is the baggie or beaker more concentrated in starch? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Is the baggie or beaker more concentrated in iodine? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Write a prediction of what you think will occur. Give reasoning for your prediction.

**Post Lab Analysis**

7. Based on your observations, which substance moved, the iodine or the starch? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

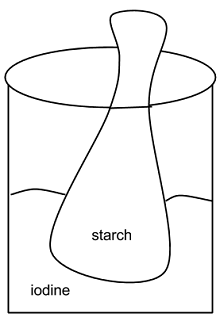
8. How did you determine this?

9. Which process did you observe in this demonstration? How do you know?

10. The plastic baggie was permeable to which substance?

11. Is the plastic baggie selectively permeable? Explain your answer.

12. Use arrows on the image of the lab set-up to illustrate how diffusion occurred in this lab.



13. What would happen if you did an experiment in which the iodine solution was placed in the baggie, and the starch solution was in the beaker? Be detailed in your description.

14. Why is it not a good idea to store iodine in a plastic bag?